

FORM EIA-902
ANNUAL GEOTHERMAL HEAT PUMP MANUFACTURERS SURVEY
1997

GENERAL INFORMATION AND INSTRUCTIONS

I. PURPOSE

Form EIA-902 is used to collect data about the manufacture and distribution of geothermal heat pumps and the status of the industry. The information collected will be used by public and private analysts interested in geothermal heat pumps and related energy issues.

II. WHO MUST SUBMIT

This report is mandatory and is being required pursuant to the authority granted to the Department of Energy (DOE) by the Federal Energy Information Administration Act of 1974 (Public Law 93-275). Form EIA-902 is to be submitted by all companies within the 50 States, District of Columbia, Puerto Rico, the Virgin Islands, Guam, and the other U.S. territories and possessions which manufactured and shipped any geothermal heat pumps during the period 1994-1996. The form requests information on any geothermal heat pumps shipped in calendar years 1994, 1995, and 1996, and detailed information about shipments made in 1996.

III. WHERE TO SUBMIT COMPLETED FORMS

Return the completed Form EIA-902 to:

U.S. Department of Energy (EI-522)
Energy Information Administration, BG-094
1000 Independence Ave., SW
Washington, D.C. 20277-7091

Completed forms may also be faxed to Peter Holihan, the Form EIA-902 Manager, at (202) 426-1308. Requests for further information and/or additional forms may be mailed to the above address, telephoned to Mr. Holihan at (202) 426-1147, or sent by E-mail to JHolihan@eia.doe.gov

IV. WHEN TO SUBMIT

Completed EIA-902 forms are due by October 20, 1997.

V. SANCTIONS

The timely submission of Form EIA-902 by those required to report is mandatory under Section 13(b) of the Federal Energy Administration Act of 1974 (FEAA) (Public Law 93-275), as amended. Failure to respond may result in a civil penalty of not more than \$2,500 for each violation, or a fine of not more than \$5,000 for each willful violation. The government may bring a civil action to prohibit reporting violations which may result in a temporary restraining order or a preliminary or permanent injunction without bond. In such civil action, the court may also issue mandatory injunctions commanding any person to comply with these reporting requirements.

VI. PROVISIONS REGARDING CONFIDENTIALITY OF INFORMATION

The Office of Legal Counsel of the Department of Justice concluded on March 20, 1991, that the Federal Energy Administration Act requires the Energy Information Administration to provide company-specific data to the Department of Justice, or to any other Federal agency when requested for official use, which may include enforcement of Federal law. The information contained on this form may also be made available, upon request, to another component of the Department of Energy (DOE), to any Committee of Congress, the General Accounting Office, or other Congressional agencies authorized by law to receive such information. A court of competent jurisdiction may obtain this information in response to an order.

The information contained on this form will be kept confidential and not disclosed to the public to the extent that it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. §552, the DOE regulations, 10 C.F.R. §1004.11, implementing the FOIA, and the Trade Secrets Act, 18 U.S.C. §1905.

GENERAL INSTRUCTIONS

Upon receipt of a request for this information under the FOIA, the DOE shall make a final determination whether the information is exempt from disclosure in accordance with the procedures and criteria provided in the regulations. To assist in this determination, respondents should demonstrate to the DOE that, for example, their information contains trade secrets or commercial or financial information whose release would be likely to cause substantial harm to their company's competitive position. A letter accompanying the submission that

explains (on an element-by-element basis) the reasons why the information would likely cause the respondent substantial competitive harm if released to the public would aid in this determination. A new justification does not need to be provided each time information is submitted on the form, if the company has previously submitted a justification for that information and the justification has not changed.

SPECIFIC INSTRUCTIONS**Item**

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| <p>1.01 (a-e) Make corrections to the company name or address in the spaces provided.</p> <p>2.0 Enter the number of geothermal heat pumps and the total rated capacity in tons of those pumps for each heat pump type listed that was manufactured and shipped in each of the years 1994, 1995, and 1996. The totals should be the sums of the various heat pump types and their capacities for each report year.</p> <p>3.0 Enter the number of geothermal heat pumps by type shipped in 1996 to each destination listed. Destinations include exported as well as the 50 States, the District of Columbia, Puerto Rico, and the U. S. Virgin Islands. Include shipments within the State of manufacture.</p> <p>4.0 Enter the number of geothermal heat pumps shipped to each type of customer in 1996. If a customer could be included in more than one of the customer categories listed, include the number of pumps shipped to that customer in the first appropriate category in the list. For example, if a customer is both an exporter and a wholesale distributor, shipments to that customer would be classified as shipments to an "exporter." Another example is a customer that is both a retail distributor and an installer. Shipments to that customer would be reported under the "retail distributor" category because that category appears in the list before the "installer" category.</p> | <p>5.0 For each economic sector enter the average rated capacity (size in tons) of geothermal heat pumps by type shipped in 1996. The economic sectors are defined below. (Detailed descriptions are in the Definitions section of the instructions):</p> <p><i>Residential</i>—Geothermal heat pump applications related to any building used for residential occupancy that has a system for heating or cooling, or both. This includes single-family homes, multifamily dwellings, and mobile. Institutional housing, such as school dormitories, hospitals, and military barracks should be included in the "Commercial" category.</p> <p><i>Commercial</i>—Geothermal heat pump applications for use in businesses where services (rather than products) are provided, such as wholesale and retail trade or health and educational services. Institutional housing such as school dormitories, hospitals, and military barracks are included in the commercial sector. Federal, State, and local government should <u>not</u> be included in commercial, but should be reported in the "Government" category.</p> <p><i>Industrial</i>—Geothermal heat pump applications for use in business where products (rather than services) are provided, such as the manufacture and processing of goods and basic materials. Also included are mining, construction, agriculture, fisheries, and forestry. Electric utilities should <u>not</u> be included in the industrial sector, but should be reported in the "Electric Utility" category.</p> |
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SPECIFIC INSTRUCTIONS (Continued)**Item**

5.0 (continued)

Government—Geothermal heat pump applications for use with local, State, or Federal government buildings.

Electric utility—Geothermal heat pump applications used at any electric utility. Nonutility power producers should not be included in the electric utility sector.

Other—Shipments of heat pumps to customers that can not be included in one of the economic sectors listed above. Please include a brief description of the customer type.

6.1 Enter any comments or remarks in the space provided.

6.2 Check either "yes" or "no" to indicate whether you want the name and address of your company to appear in an Energy Information Administration (EIA) report publishing the data collected by this survey. Persons who read the report may refer to the Appendix to determine who are geothermal heat pump manufacturers.

6.3 Check either "yes" or "no" to indicate whether you want to receive a copy of the EIA report publishing the data collected by this survey.

7.0 Enter the name, title, signature, date and telephone number of a company representative who may be contacted for additional information regarding this submission.

DEFINITIONS

1. **ARI certified:** certification by the Air-Conditioning and Refrigeration Institute (ARI) that a pump has been tested using procedures stipulated in ARI standards and that it meets the manufacturer's certified published performance rating.

ARI Standards 320, 325, and 330 refer to a rating system for testing performance of a water source heat pump when installed under three different conditions. For this reason, a single pump could be certified under all three ratings, and could potentially be installed under different circumstances.

Geothermal heat pumps refer to systems where the unit uses the earth or natural body of water as a heat sink. There are typically three types of geothermal systems:

- 1) A water source heat pump rated under standard ARI-320 is typically installed in a commercial application where several heat pumps are installed in series, with a central chiller or boiler supplying the heating or cooling of the fluid.
- 2) A ground water source system is a standard ARI-325 installation, and is an open-loop system that uses a natural body of water for the exchange of heat. An open-loop heat pump system is a heat pump system that directly utilizes water from a well or water body, pumps it through a pipe for use as a heat exchanger and returns it back to the environment.
- 3A) A ground source system is a standard ARI-330 installation, and is a closed-loop system that uses water or a water/glycol solution to exchange heat. The system employs extensive tubing which is buried fairly deep the ground. A closed-loop heat pump system is a geothermal heat pump system that uses water/anti-freeze in a buried pipe loop as a heat exchanger. The water/anti-freeze in the loop never leaves the system. Loop piping can be installed vertically or horizontally in the earth, a lake, a channel or the ocean.
- 3B) A direct expansion system is a geothermal heat pump system that uses refrigerant in a buried pipe loop as a heat exchanger. The refrigerant in the

loop never leaves the system. A direct expansion system is also ground source system with a closed-loop which uses refrigerant throughout the system rather than a water/glycol solution to exchange heat.

2. **Commercial sector:** The commercial sector, as defined economically, consists of all business facilities and organizations that are engaged in other than those classified as industrial (manufacturing, agriculture, forestry, fisheries, mining, and construction), government, or electric utilities. Commercial establishments include hotels, motels, restaurants, wholesale businesses, retail stores, laundries, and other enterprises; religious and nonprofit organizations; transportation facilities such as bus stations, airports, and train stations; health, social, and educational institutions. Institutional housing, such as school dormitories, hospitals, and military barracks are included in the commercial sector. Federal, State, and local governments are not included in the commercial sector for this survey, but should be reported in the government sector.
3. **Electric utility sector:** The electric utility sector includes a corporation, person, agency, authority, or other legal entity or instrumentality that owns, and/or operates facilities for the generation, transmission, distribution, or sale of electric energy. Nonutility electric power producers are not included in the electric utility sector and should be included in the industrial sector.
4. **Geothermal heat pump:** Also referred to as ground-source, earth-coupled, or ground-water heat pumps. A pump which uses the earth as a heat sink during warm weather and as a heat source during colder weather. A pump is rated to ARI standards but may not be certified by ARI.
5. **Government sector:** The government sector includes all local, State, and Federal government buildings. This includes military barracks.
6. **Heat sink:** A substance into which heat is injected or is absorbed. Substances can be gas, liquid or solid like air, water and earth.
7. **Heat source:** A substance from which heat is received or radiates. Substances can be a gas, liquid or solid like air, water and earth.

DEFINITIONS (continued)

8. **Industrial sector:** The industrial sector comprises manufacturing industries, which make up the largest part of the sector, along with mining, construction, agriculture, fisheries, and forestry. Establishments in this sector range from steel mills, to small farms, to companies assembling electronic components. Electric utilities should not be included in the industrial sector but should be reported in the electric utility sector.
9. **Residential sector:** The residential sector consists of all private residences, whether occupied or vacant, owned or rented, including single-family homes, multifamily housing units, and mobile homes. Secondary homes, such as summer homes, are also included. Institutional housing, such as school dormitories, hospitals, and military barracks are included in the commercial sector.
10. **Ton:** A measure of the amount of Btu's (British thermal units) needed to melt one ton of ice in a 24-hour period. One ton equals 12,000 Btu's/hour available to heat and/or cool space.